Addictive Behaviors 39 (2014) 553–557

Contents lists available at ScienceDirect

Addictive Behaviors

Agreement between DSM-IV and ICD-10 criteria for opioid use disorders in two Iranian samples

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HIGHLIGHTS

- The agreement between DSM-IV and ICD-10 on opioid dependence was excellent.
- In the clinical samples, the agreement between abuse and harmful use was excellent.
- In the general population, a fair agreement was observed in this regard.
- The inter-rater reliability was perfect or excellent for both systems.

ARTICLE INFO

Keywords:
DSM-IV
ICD-10
Opioid-related disorders
Classification
Iran

ABSTRACT

The aim of this study was to determine the agreement between the two systems in opioid users in the general population and a clinical sample. Two series of data were used in this study. The first was the data of 236 home-residing opioid abusers aged 15–64, who had previously participated in the Iran Mental Health Survey (IranMHS) in 2011, and the second was the data of 104 general psychiatry patients from inpatient or outpatient wards of two psychiatry hospitals in Tehran. Opioid use disorders were evaluated with CIDI-version 2.1. The disorders were assessed in all participants who used opioid substances for at least 5 times during the past 12 months. In the sample from the general population, the agreement between the two systems on the diagnosis of dependence was excellent (0.81). The agreement between the two systems on the diagnosis of abuse and harmful use was 0.41. In the clinical sample, the agreement between the two systems on the diagnosis of dependence or any opioid use disorder was 0.96 and 0.93, respectively. The agreement between abuse and harmful use was 0.9 and −0.02 with and without regarding hierarchy, respectively. The inter-rater reliability of both DSM-IV and ICD-10 systems for all diagnosis was more than 0.95. The results of the diagnosis of dependence in the two systems had a weak concordance with treatment. The diagnostic criteria of DSM-IV and ICD-10 regarding dependence are very similar and the diagnosis produced by each system is concordant with the other system. However, the two systems have noticeable discrepancies in the diagnosis of abuse and harmful use. The discrepancies result from their conceptual differences and necessitate further revision in the definition of these disorders in the two systems.

1. Introduction

Nowadays, two systems are majorly used for the diagnosis of substance use related disorders. The first system is "Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV)", developed by the American Psychological Association (American Psychiatric Association, 1994). It was published in 1994 and is used in the United States and a number of other countries. The first edition of DSM was developed in

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0306-4603/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.addbeh.2013.10.032

1952. In its third edition published in 1980, substance use related disorders were dissevered from personality disorders.

The second system, International Classification of Diseases, has been developed by the World Health Organization and its 10th edition is now available. It has been used since 1992 in different countries (World Health Organization, 1993). DSM-IV employs eleven criteria to diagnose substance use related disorders, 7 for dependence and 4 for abuse. Those who have at least 3 out of 7 criteria of dependence are categorized as dependent, and those who have at least 1 out of 4 criteria of abuse are categorized as abusers.

Similar to DSM-IV, two disorders are defined in the ICD system. The first is dependence with 6 criteria out of which the existence of at least 3 confirms the diagnosis, and the second is harmful use which includes conclusive evidence of physical or mental damage caused by substance use.

Although a lot of criteria are very similar in both systems, one of the dependence criteria in ICD is the cognitive criterion of craving which is absent in DSM-IV. In both systems, dependence syndrome is the cornerstone of substance use related disorders (World Health Organization, 1993, 1994). DSM-IV and ICD-10 are theoretically related (Hasin, Carpenter, McCloud, Smith, & Grant, 1997; Rounsaville, Bryant, Babor, Kranzler, & Kadden, 1993) and different studies have evaluated this relationship (Cottler, 1993; Grant, 1993; Hasin, Li, McCloud, & Endicott, 1996; Langenbucher, Morgenstern, Labouvie, & Nathan, 1994a; Rounsaville et al., 1993). However, this similarity and relationship reaches its nadir when it comes to abuse and harmful use since the criteria related to abuse deal with interpersonal, social, occupational, and legal issues while harmful use puts emphasis on mental or physical damage caused by substance use.

Different clinical and population-based studies have assessed the agreement between the two systems. Some studies have evaluated alcohol (Grant, 1996; Hasin, Li, McCloud, & Endicott, 1996; Pollock, Martin, & Langenbucher, 2000; Schuckit et al., 1994), cannabis (Swift, Hall, & Teesson, 2001), inhalants (Howard, Cottler, Compton, & Ben-Abdallah, 2001), or alcohol and other substances (Andrews & Slade, 1998; Basu, Gupta, Singh, Mattoo, & Kulhara, 2000; Langenbucher et al., 1994a; Miele et al., 2001; Rapaport, Tipp, & Schuckit, 1993; Rounsaville et al., 1993) and assessed the agreement between the results regarding dependence and abuse (harmful use in ICD) between DSM-IV and ICD. A number of studies have investigated the reliability of DSM-IV (Bucholz et al., 1995; Canino et al., 1999; Chatterji et al., 1997; Easton et al., 1997; Grant, Harford, Dawson, Chou, & Pickering, 1995; Hasin et al., 1997; Hasin, Hatzenbuehler, Keyes, & Ogburn, 2006; Hasin et al., 1996; Horton, Compton, & Cottler, 2000; Langenbucher, Morgenstern, Labouvie, & Nathan, 1994b; Malison et al., 2011; Miele et al., 2000; Pierucci-Lagha et al., 2007; Ustun et al., 1997) and ICD-10 (Chatterji et al., 1997; Easton et al., 1997; Grant et al., 1995; Hasin et al., 2006; Miele et al., 2001; Ustun et al., 1997) in the diagnosis of opioids and other substance related disorders; the results of these studies are different due to the fact that disorders related to different substances were assessed and different statistical methods of analysis were used.

Apart from the knowledge of the reliability of the methods of diagnosing opioid related disorders, what makes this study necessary is that first, DSM-IV and ICD are nowadays considered important tools of collecting data and presenting health related statistics in national and international levels and therefore, it is necessary to know the agreement between the two systems in order to compare the calculated indices between them. Second, it is important to know the agreement between the two systems to evaluate the success of the efforts to integrate the criteria of the two systems and make them even more similar or to develop a single system. Third and most important of all, knowledge of the similarities and differences, and efforts to lower the differences can make future studies on substance use disorders more homogenous and therefore will result in scientific advances regarding these disorders (Grant, 1996).

Since a limited number of studies have evaluate the agreement between ICD-10 and DSM-IV in the users of opioid substances worldwide and considering the fact that Iran holds one of the highest rates of opioid use in the world (United Nations Office on Drugs and Crime, 2011), we used the data of the Iran Mental Health Survey (IranMHS) to assess the agreement between the two systems in opioid users in the general population. Moreover, the data of another study on psychiatric patients were also used and similar analyses were performed.

2. Methods

2.1. Data

Two series of data were used in this study. The first series was the data of the Iran Mental Health Survey (IranMHS), a cross-sectional household study with sampling performed in the national level. The study population of IranMHS was home-residing Iranian people aged 15–64 out of whom 7886 individuals were selected through 3-stage random sampling. The complete methodology of this survey has been already published (Rahimi-Movaghar et al., in print). The main tool for data collection and analysis in this study was Composite International Diagnosis Interview version 2.1 (CIDI 2.1), 12-Month version. The reliability of the Persian version of modules of drugs and alcohol in psychiatric inpatients and outpatients has been already evaluated and confirmed (Arabgol et al., 2005). These modules contain questions on screening, frequency of use, and the symptoms of substance use disorders including abuse and dependence, designed based on both ICD-10 and DSM-IV criteria. Out of 7886 participants of this study, 236 had a history of using opioids for at least 5 times in the past 12 months and all the criteria of opioid use disorders based on ICD-10 and DSM-IV were investigated in all 236 users.

The second series was the data of a clinical study performed in two university-affiliated psychiatry hospitals, Iran and Rouzbeh. In this study, 104 adult inpatients or outpatients with general psychiatric disorders were included through purposeful sampling based on the inclusion and exclusion criteria under the supervision of two team member psychiatrists. CIDI-version 2.1—12 Month was also employed in this study, as well. There was one interviewer and one observer who filled the questionnaires independently. The observer was allowed to ask more questions if necessary. They were clinical psychologists with work experience in psychiatric hospitals and were trained for this field work.

CIDI-version 2.1-12 Month includes the diagnostic criteria of DSM-IV and ICD-10. According to DSM-IV, the criteria of dependence are tolerance; withdraw; taking the substance in larger amount and for longer periods than before; persistent desire or repeated unsuccessful attempts to decrease or control substance use; spending much time/activity to obtain, use, or recover; giving up or reducing important social activities for substance use; and continued use despite knowledge of adverse continuous or recurrent psychological and physical consequences likely to have been caused or exacerbated by substance. The criteria for abuse in DSM-IV include failure to fulfill major role obligation at work, home or school; use in hazardous situations; recurrent substance related legal problems; and continued use despite persistent or recurrent social or interpersonal problems (American Psychiatric Association, 1994). The criteria of dependence according to ICD-10 are a strong desire or sense of compulsion to take the substance; difficulties in controlling substance-taking behavior in terms of its onset, termination, or levels of use; withdrawal symptoms; tolerance; preoccupation with substance use, as manifested by important alternative pleasures or interests being given up or reduced because of substance use; or a great deal of time being spent in activities necessary to obtain, take or recover from the effects of the substance despite clear evidence. To diagnose harmful use according to ICD-10, there must be clear evidence that the substance use is responsible for (or substantially contributed to) physical or psychological harm, including impaired judgment or

dysfunctional behavior, which may lead to disability or have adverse consequences for interpersonal relationships. The nature of the harm should be clearly identifiable and specified. The pattern of use must have persisted for at least 1 month or has occurred repeatedly within a 12-month period. The disorder should not meet the criteria for any other mental or behavioral disorder related to the same drug in the same time period (World Health Organization, 1993).

2.2. Statistical analysis

Kappa was used to assess the agreement between DSM-IV and ICD-10 (Cohen, 1960). Yule's Y statistic (Yule, 1912) was used since the prevalence of abuse and harmful use was low. Similar to Kappa, Yule's Y statistic has a range of −1 to +1 where +1 indicates perfect agreement, 0.75 shows excellent agreement, 0.4 to 0.74 suggests fair to good agreement, and less than 0.39 represents poor agreement. Kappa takes on the value zero if there is no more agreement between two judges or tests as can be expected on the basis of chance (Fleiss, 1981). The Kendall Tau coefficient was used to assess the agreement between the DSM-IV and ICD-10 on the results of diagnosis and treatment status.

3. Results

In the sample obtained from the general population, the prevalence of the opioid dependence, opioid abuse, and any opioid use disorder based on DSM-IV was 0.49%, 0.08%, and 0.58%, respectively.

According to ICD-10, the prevalence of dependence, harmful use, and any opioid use disorder was 0.51%, 0.025%, and 0.53%, respectively. Regardless of dependence, having the criteria of abuse without considering hierarchy was 0.48% based on DSM-IV and having the criteria of harmful use was 0.35% according to ICD-10.

The agreement between the two systems on the diagnosis of dependence was excellent (0.81) but their agreement on the diagnosis of abuse and harmful use was poor based on Kappa (0.12). However, since the aforementioned rates were low, Yule's Y statistic was calculated which showed a fair agreement (0.41). The agreement between the two systems on any diagnosis was 0.73, which was good. The agreement between the two systems on the diagnosis of abuse and harmful use, regardless of hierarchy, was almost good (0.52) (Table 1).

Table 2 presents the results of the comparison of treatment history for opioid use disorders with diagnosis made based on ICD-10 and DSM-IV in the general population. The calculated Kappa and Kendall coefficient for treatment status and results were 0.21 and 0.49 for DSM-IV and 0.21 and 0.42 for ICD-10, respectively.

In a study on 104 clinical samples, the two systems showed an excellent agreement on the diagnosis of dependence, but the agreement for abuse and harmful use was poor (Table 3). The inter-rater reliability for both DSM-IV and ICD-10 was excellent (Table 4).

Table 1
The indices of agreement between DSM-IV and ICD-10 (IranMHS, n = 236).

		ICD-10			Kappa
DSM-IV		Dependence	No dependence	Total	0.81(0.74–0.89)
	Dependence	107	9	116	
	No dependence	13	107	120	
	Total	120	116	236	
DSM-IV		Any diagnosis	No diagnosis	Total	0.73(0.64–0.81)
	Any diagnosis	115	21	136	
	No diagnosis	11	89	100	
	Total	126	110	236	
DSM-IV		Diagnosis of harmful use	No diagnosis of harmful use	Total	0.41(0.05–0.78)*
	Abuse	2	18	20	
	No abuse diagnosis	4	212	216	
	Total	6	230	236	
DSM-IV		With symptoms of harmful use	Without symptoms of harmful use	Total	0.52(0.41–0.62)
	With symptoms of Abuse	69	43	112	
	Without symptoms of abuse	13	111	124	
	Total	82	154	236	

* Yule's Y statistic was used since the prevalence of abuse and harmful use was low.

Table 2
Comparison of treatment history in the past 12 months with diagnosis based on DSM-IV and ICD-10(IranMHS, n = 236).

Treatment in L12M		No treatment	Outpatient care	Inpatient care	Total
DSM-IV	Negative	89 (89)	11(11)	0 (0)	100 (100)
	Abuse	17 (85)	2 (10)	1 (5)	20 (100)
	Dependence	43(37.1)	52(44.8)	21 (18.1)	116 (100)
	Total	149 (63.1)	65 (27.5)	22 (9.3)	236 (100)
ICD-10	Negative	93 (84.5)	15 (13.6)	2 (1.8)	110 (100)
	Harmful use	5 (83.3)	1 (16.7)	0 (0)	6 (100)
	Dependence	51 (42.5)	49 (40.8)	20 (16.7)	120 (100)
	Total	149 (63.1)	65 (27.5)	22 (9.3)	236 (100)

4. Discussion

The results of the current study showed that the agreement between the two systems on the diagnosis of dependence in opioid users was excellent in both the general population and the clinical samples. In the clinical samples, the agreement between abuse and harmful use was excellent but in the general population, a fair agreement was observed in this regard.

To our best knowledge, this is the first study of the agreement between DSM-IV and ICD-10 on opioid use disorders in the general

Table 3
Agreement on diagnosis between DSM-IV and ICD-10 in the clinical samples.

		ICD-10			Kappa
DSM-IV		Dependence	No dependence	Total	0.95(0.91–0.99)
	Dependence	32	1	33	
	No dependence	1	70	71	
	Total	33	71	104	
DSM-IV		Any diagnosis	No diagnosis	Total	0.91(0.83–0.99)
	Any diagnosis	67	1	68	
	No diagnosis	3	33	36	
	Total	70	34	104	
DSM-IV		Diagnosis of harmful use	No diagnosis of harmful use	Total	−0.02 (−0.04–0.007)
	Abuse	0	3	3	
	No abuse diagnosis	1	100	101	
	Total	1	103	104	
DSM-IV		With symptoms of harmful use	Without symptoms of harmful use	Total	0.89(0.79–0.99)
	With symptoms of abuse	25	2	27	
	Without symptoms of abuse	2	61	63	
	Total	27	63	90	

Table 4
Inter-rater reliability of diagnosis in the clinical sample based on DSM-IV and ICD-10.

			Interviewer			Kappa
DSM-IV	Observer		Dependence	No dependence	Total	0.97(0.94–1)
		Dependence	33	1	34	
		No dependence	0	70	70	
		Total	33	71	104	
	Observer		Abuse	No abuse	Total	0.96(0.93–0.99)
		Abuse	34	2	36	
		No abuse	0	68	68	
		Total	34	70	104	
ICD-10	Observer		Dependence	No dependence	Total	0.95(0.91–0.99)
		Dependence	32	1	33	
		No dependence	1	70	71	
		Total	33	71	104	
	Observer		Harmful use	No harmful use	Total	1
		Harmful use	26	0	26	
		No harmful use	0	63	63	
		Total	26	63	89	

population. Similar to our findings, two previous studies on clinical samples reported an excellent agreement between the two systems on the diagnosis of dependence (Langenbucher et al., 1994a; Schuckit et al., 1994). Two other studies (Basu et al., 2000; Miele et al., 2001) reported a good agreement, which was lower than the agreement in our study. In regards to the agreement between the two systems on the diagnosis of alcohol dependence, an excellent agreement has been reported by a number of studies which is in line with our results (Grant, 1996; Langenbucher et al., 1994a; Miele et al., 2001; Rapaport et al., 1993). These results were expected since the diagnostic criteria of dependence are similar in DSM-IV and ICD-10. However, DSM-V new definition of substance use disorder, which combines the criteria of substance dependence and substance abuse with some changes and present a one-dimensional concept, might show a higher difference with ICD-10.

The results of the agreement on harmful use and abuse in the general population and the clinical samples were not satisfactory; the agreement was fair in the sample from the general population and poor in the clinical sample. Many studies that have evaluated the agreement in clinical samples have reported different results. Langenbucher reported a good agreement in alcohol users and an excellent agreement in opioid users (Langenbucher et al., 1994a) while Shuckit et al. showed a poor agreement in all types of substance users, including opioid users (Schuckit et al., 1994). Furthermore, some studies have reported a fair agreement in substance users (Miele et al., 2001; Rapaport et al., 1993). In different samples of the general population, the agreement between harmful use and abuse in the users of alcohol, cocaine, and cannabis has been reported to be poor to fair (Andrews & Slade, 1998; Grant, 1996; Hasin, Li, McCloud, & Endicott, 1996; Swift et al., 2001), which is almost similar to the results of the current study. These two diagnostic systems have conceptual differences in the diagnosis of harmful use and abuse. Abuse highlights social, occupational, legal and physical problems while harmful use puts emphasis only on psychological or physical damage, which make their agreement noticeably lower that the agreement on the criteria of dependence. In addition, this study showed that harmful use, which is somehow different concept than abuse is uncommon in opioid users.

In the current study, the inter-rater reliability was perfect or excellent for both systems. Similar to our study, studies that evaluated the reliability of DSM-IV in the diagnosis of substance use related disorders showed that the reliability was excellent (Chatterji et al., 1997; Easton et al., 1997; Hasin, Trautman, et al., 1996; Langenbucher et al., 1994b; Malison et al., 2011; Miele et al., 2001) or good (Hasin et al., 2006; Horton et al., 2000; Ustun et al., 1997), for opioids; a good to excellent reliability has also been reported for alcohol (Canino et al., 1999; Chatterji et al., 1997; Easton et al., 1997; Grant et al., 1995; Hasin et al., 1997; Hasin et al., 2006; Hasin, Li, McCloud, & Endicott, 1996; Hasin, Trautman, et al., 1996; Horton et al., 2000; Miele et al., 2000) or other substances like cocaine, cannabis, stimulants, and sedatives (Bucholz et al., 1995; Chatterji et al., 1997; Easton et al., 1997; Grant et al., 1995; Hasin et al., 1997; Hasin et al., 2006; Hasin, Trautman, et al., 1996; Horton et al., 2000; Langenbucher et al., 1994b; Miele et al., 2000; Pierucci-Lagha et al., 2007).

The reliability of ICD-10 in the diagnosis of heroin related disorders (Grant et al., 1995; Miele et al., 2001), cocaine, cannabis, sedatives, stimulants, and hallucinogens (Chatterji et al., 1997; Easton et al., 1997; Grant et al., 1995; Hasin et al., 2006; Miele et al., 2001; Ustun et al., 1997) has been reported good to excellent; however, the current study showed a higher reliability in comparison with them.

Comparison of the results of diagnosing a disorder with ICD-10 and DSM-IV with history of receiving treatment showed that in contrary to our expectations, not all of those who sought treatment in the past 12 months had the diagnosis of opioid use disorders in the same time period, which is confirmed by the weak Kappa and Kendall coefficient. However, it should be noted that self-reports on clinical symptoms may not be 100% accurate and opioid use disorders may have been underreported.

It should be noted that consuming, carrying, buying, and selling opioids is a criminal offense in Iran; although several measures were taken in the IranMHS survey and the clinical survey to ensure participants about confidentiality, it is very likely that this limitation led to an underestimated number of substance users and affected the declared pattern of symptoms.

The present study had two strong points; first, a representative sample of the general population was used, which enhanced the external validity of the study and second, clinical samples from two referral centers in Tehran were also used and the agreement between the two groups was evaluated simultaneously.

5. Conclusion

The agreement between ICD-10 and DSM-IV on the diagnosis of dependence was excellent in both the general population and the clinical sample and it shows that for both clinical and research purposes using DSM-IV or ICD-10 classification does not differ considerably for opioid dependence. However, in regards to abuse and harmful use, an excellent agreement was only noted in the clinical sample and the agreement in the general population was poor, indicating that the diagnostic criteria of DSM-IV and ICD-10 regarding dependence are very similar and the diagnoses produced by each system is concordant with the other system. Nevertheless, the two systems have noticeable discrepancies in the diagnosis of abuse and harmful use. The discrepancies result from their conceptual differences and necessitate further revision in the definition of these disorders in the two systems.

Role of funding sources

The main study of IranMHS was financially supported by the Ministry of Health through the contract number 132-1491 of Tehran University of Sciences and the contract number 89-D-432-143 of Mental Health Research Network. They had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication. The secondary analysis for this study was the PhD thesis of Mohammad Javad Tarrahi in Epidemiology.

Contributors

Study concept: Akbar Fotouhi and Afarin Rahimi-Movaghar. Study design: All authors. Analysis and interpretation: Mohammad Javad Tarrahi, Akbar Fotouhi, Hojjat Zeraati, Afarin Rahimi-Movaghar. Developing the first draft of paper: Mohammad Javad Tarrahi, Afarin Rahimi-Movaghar. Commenting and preparing the final paper: All authors.

Conflict of Interest

Dr. Afarin Rahimi-Movaghar is a member of the "World Health Organization (WHO) International Advisory Group for the Revision of the ICD-10 Mental and Behavioural Disorders" and a member of "WHO ICD-11 Working Group on the Classification of Substance-Related and Addictive Disorders". The other authors have no competing interests.

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